



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,543	01/08/2002	Warren B. Jackson	D/A0977	5499
7590	09/07/2006		EXAMINER	
Mark S. Svat FAY, SHARPE, FAGAN, MINNICH & McKEE, LLP 1100 Superior Avenue Seventh Floor Cleveland, OH 44114-2579			YACOB, SISAY	
		ART UNIT	PAPER NUMBER	2612
DATE MAILED: 09/07/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/042,543	JACKSON ET AL.	
	Examiner Sisay Yacob	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 08 January 2002.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-26 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 08 January 2002 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

1 The application of Jackson et al. for "Analog actuation allocation structure with many actuators" filed on January 8, 2002 has been examined.

Claims 1-26 are pending.

Drawings

2 Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4 Claims 1, 2, 4, 9, 15, 17 and 21 are rejected under 35 U.S.C. 102(e) as being as being anticipated by US Patent of Muurinen (6,504,492 B1).

5 As to claim 1, Muurinen discloses a system for producing an actuator response (Col. 2, lines 31–43), the system comprising a plurality of rows of actuators capable of producing an actuator response in reply to an control signal (Item 907 of figure 9), a resistive strip connected to the plurality of rows of actuators (Item 901 of figure 9), and a first electrode (Item 905 of figure 9) having a first voltage (Item Vcc of figure 9) connected to the resistive strip and a second electrode (Item 906 of figure 9) having a second voltage (Item Vout of figure 9) connected to the resistive strip for transmitting the control signal to the rows of

actuators to thereby cause the rows of actuators to produce the actuator response (Col. 8, lines 24-67; Col. 9, lines 1-2).

6 As to claim 2, the system of claim 1, further, Muurinen discloses wherein the plurality of rows of actuators produce the actuator response that depends on a locally computed value of a function of the control signal (Col. 9, lines 3-13).

7 As to claim 4, the system of claims 3, further, Muurinen discloses wherein the first electrode is connected to a first end of the resistive strip, and the second electrode is connected to a second end of the resistive strip (See figures 9 and 10).

8 As to claim 9, Muurinen discloses a system for producing an actuator response (Col. 2, lines 31-43), the system comprising a plurality of rows of actuators capable of producing an actuator response in reply to a control signal (Item 907 of figure 9), a resistive strip connected to the plurality of rows of actuators (Item 901 of figure 9), and N electrodes, where N is an integer greater than one (Items 905 and 906 of figure 9), having a voltage $V_1 \dots, V_N$, (Items Vcc and Vout of figure 9) each electrode being connected to the resistive strip (Item 901 of figure 9) to transmit the control signal to the rows of actuators to thereby cause the rows of actuators to produce the actuator response (Col. 8, lines 24-67; Col. 9, lines 1-2).

9 As to claim 15, the system of claim 9, further, Muurinen discloses wherein each of the plurality of rows of actuators can produce two discrete actuator responses (Col. 10, lines 3-18).

10 As to claim 17, Muurinen discloses a system for producing an actuator response (Col. 2, lines 31-43), the system comprising a resistive sheet (Item 901 of figure 9), an array of actuators electrically connected to said resistive sheets via contacts (Item 907 of figure 9), and a plurality of electrodes for fixing voltages on the resistive sheet (Items 905 and 906 of figure 9), wherein by varying the voltages a desired actuation profile can be produced by the array of actuators to produce the actuator response (Col. 8, lines 24-67; Col. 9, lines 1-2).

11 As to claim 21, Muurinen discloses a method for producing an actuator response (Col. 2, lines 31-43), the method comprising electrically connecting a plurality of rows of actuators to a resistive strip (Item 901 of figure 9), said actuators capable of producing an actuator response in reply to a control signal (Item 907 of figure 9), applying a first voltage to the resistive strip via a first electrode (Items 905 and Vcc of figure 9), and applying a second voltage to the resistive strip via a second electrode (Items 906 and Vout of figure 9), wherein the application of said first voltage and said second voltage provides the control signal that causes the actuators to produce the actuator response (Col. 8, lines 24-67; Col. 9, lines 1-2).

Rejections - 35 USC § 103

12 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13 The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14 Claims 3, 5-8, 10-14 and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent of Muurinen (6,504,492 B1).

15 As to claims 3 and 22, the system and method of claims 1 and 21, however, Muurinen does not expressly disclose wherein the length of the resistive strip is substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows. But,

Muurinen discloses the length of the resistive strip is employed to determine the electrical characteristics of the actuation based on the connection point (Col. 3, lines 36-47).

It would have been obvious, to one skilled in art, to have the length of the resistive strip is substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows, because Muurinen discloses the length of the resistive strip is employed to determined the electrical characteristics of the actuation and one skilled in the art would realize the length of the resistive strip may be substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows, which may make determining the connection point easier.

16 As to claims 5-8 and 23-26, the system and method of claims 1 and 4 and 21 , it would have been obvious to one skilled in the art, to have the first voltage has a value V_1 and the second voltage has a value V_2 such that $(V_1+V_2)/2$ is chosen to approximate a desired actuation profile, because, since Muurinen discloses the equivalent circuit for the resistive strips based on distances (Col. 5, lines 6-21; See figures 3b, 4b, 5b, 6b, 11a-b and 13) and one skilled in the art realizes that the voltage at half distance between V_1 and V_2 would give the $(V_1+V_2)/2$. Also, the first voltage has a value V_1 and the second voltage has a value V_2 such that $(V_1- V_2)$ is chosen to approximate a desired actuation profile wherein $(V_1- V_2)$ is chosen to substantially equal an average slope of the desired

actuation profile over a position substantially equal to a location of the resistive strip.

17 As to claim 10, the system of claim 9, however, Muurinen does not expressly disclose the distance between any two adjacent electrodes is substantially equal to a correlation length of the plurality of rows of actuators.

It would have been obvious, to one skilled in the art, at the time of the invention to make the distance between any two adjacent electrodes is substantially equal to a correlation length of the plurality of rows of actuators, because one skilled in the art would realize having substantially equal or substantially unequal distance between any two adjacent electrodes depending on the number of rows of actuators that are desired to be incorporated.

18 As to claim 11-14, the system of claim 9, it would have been obvious to one skilled in the art, to have the $(V_j + V_{j+1})/2$, for each j satisfying $1 \leq j \leq N-1$, is chosen to approximate a desired actuation profile, because, since Muurinen discloses the equivalent circuit based on distance (Col. 5, lines 6-21; Col. 8, lines 24-67; See figures 3b, 4b, 5b, 6b, 9, 10, 11a-b and 13) and one skilled in the art realizes that the voltage at half distance between V_j and V_{j+1} would give the $(V_j + V_{j+1})/2$ where each j satisfying $1 \leq j \leq N-1$. Also, the $(V_j - V_{j+1})$, for each j satisfying $1 \leq j \leq N-1$, is chosen to approximate a desired actuation profile voltage wherein $(V_j - V_{j+1})$ is chosen to substantially equal an average slope of the desired

actuation profile over a position substantially equal to a location of the portion of the resistive strip-between the j^{th} and $j^{\text{th}}+1$ electrodes.

19 As to claim 18, the system of claim 17, however, Muurinen does not expressly disclose wherein the plurality of electrodes includes at least four electrodes for fixing voltages, V_1, \dots, V_4 on the resistive sheet, wherein by varying the voltages V_1, \dots, V_4 a desired actuation profile can be produced by the array of actuators to produce the actuator response. But Muurinen discloses wherein the plurality of electrodes includes at least two electrodes (Items 905 and 906 of figure 9) for fixing voltages, V_1 and V_2 (Items V_{cc} and V_{out} of figure 9) on the resistive sheet (Item 901 of figure 9), wherein by varying the voltages V_1 and V_2 a desired actuation profile can be produced by the array of actuators (Item 907 of figure 9) to produce the actuator response (Col. 2, lines 31-43; Col. 8, lines 24-67; Col. 9, lines 1-2).

It would have been obvious, to one skilled in art, to modify the system for producing an actuator response of Muurinen, by incorporating additional electrodes, in order of to have a plurality of electrodes includes at least four electrodes for fixing voltages, V_1, \dots, V_4 on the resistive sheet, wherein by varying the voltages V_1, \dots, V_4 a desired actuation profile can be produced by the array of actuators to produce the actuator response, because Muurinen discloses two electrodes of electrodes includes at least two electrodes for fixing voltages, V_1 and V_2 on the resistive sheet, wherein by varying the voltages V_1 and V_2 a desired actuation profile can be produced by the array of actuators to

produce the actuator response and one skilled in the art would realize adding a plurality of electrodes to provide additional voltages would increase a number of actuators on the resistive strip. Also, in the art of analog to digital converters and analogue circuits, employ a plurality of electrodes and having a plurality of voltages to different circuitry is well known and widely used.

20 As to claim 19, the system of claim 18, further, it would have been obvious, to one skilled in the art, to have wherein, if the four voltages lie substantially at points (0,0), (1,0), (0,1) and (1,1) of a Cartesian coordinate system, the desired actuation profile, expressed as voltage $V(x,y)$ as a function of position within a square having corners at said points, is given substantially by $V(x,y)= V_3(1-x)(1-y)+ V_1(1-x)y+ V_4x(1-y)+ V_2xy$, because Muurinen discloses wherein, if the two voltages lie substantially at points (0,0) and (1,0) of a Cartesian coordinate system, the desired actuation profile, expressed as voltage $V(x,y)$ as a function of position within a square having corners at said points, is given substantially by $V(x,y)= V_1(1-x)y+ V_2xy$ and one skilled in the art would realize if there are four voltages that lie substantially at points (0,0), (1,0), (0,1) and (1,1) or at any other points of a Cartesian coordinate system, the desired actuation profile, expressed as voltage $V(x,y)$ as a function of position within a square having corners at said points, is given substantially by $V(x,y)= V_1(1-x)y+ V_2xy$ or according to the corresponding points of a Cartesian coordinate system.

Allowable Subject Matter

Claims 16 and 20 are allowable.

21 Referring to claims 16 and 20, the following is a statement of reasons for the indication of allowable subject matter: the prior art fail to suggest limitations that "a particular one of the N electrodes is allowed to float, thereby increasing a correlation region". And also, "a capacitive layer coupled to the resistive sheet to allow a correlation region to depend on time".

Conclusion

22 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following cited arts are further to show the state of art related to Analog actuation allocation structure with many actuators.

23 In the US Patent of (4,755,634) Pepper, Jr. discloses devices for providing information, in the form of electrical signals, about the position of a source or sink of electric current relative to two or more current-carrying electrodes. In particular, it relates to devices for converting selected touch points or positions on a surface (reflecting hand motions) into electric signals to provide an interface between man and machine. It also relates to systems for producing electric fields with predetermined characteristics.

24 In the US Patent of (5,453,941) Yoshikawa discloses a method and device for detecting and measuring both pressure and coordinates in pressure-sensitive resistance pads when written data or diagrams are manually input with a stylus, pen, finger, or other such implement and when the input data is three-dimensional.

25 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sisay Yacob whose telephone number is (571) 272-8562. The examiner can normally be reached on Monday through Friday 8:00 AM - 4:30 PM.

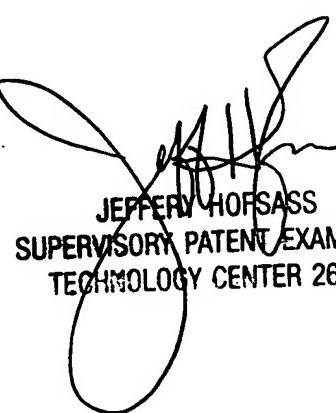
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffery A. Hofsass can be reached on (571) 272-2981. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sisay Yacob

08/25/2006

S-Y.



JEFFERY HOFSSASS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600